

Distributed Plug-and-Play Planning and Scheduling System, Phase I

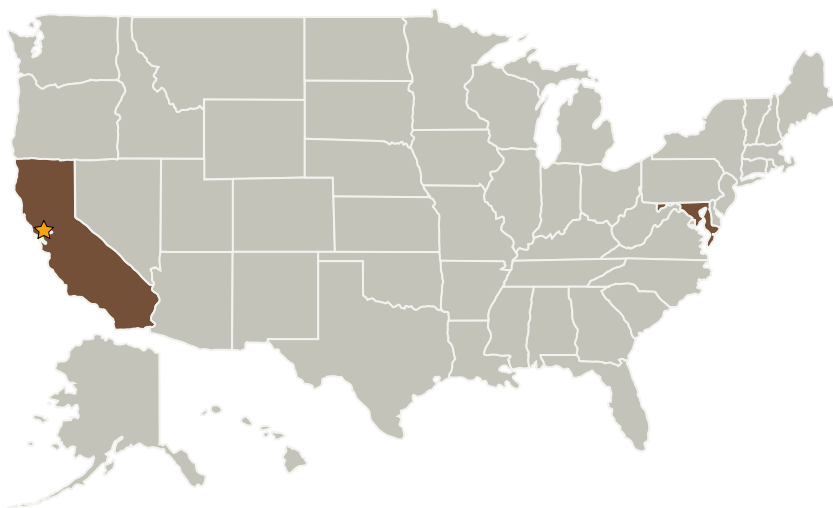
Completed Technology Project (2006 - 2006)



Project Introduction

Planning and scheduling (P&S) is an essential task for managing current and future NASA missions. P&S systems are used in many areas of spacecraft operations including science planning, flight dynamics operations, and space and ground network scheduling. Typically, different tools are used by different users, possibly in different locations, for each of these functions because current tools are not suited to addressing all of a mission's P&S needs. There is thus an additional need to integrate the results of all these scheduling efforts, which increases mission cost, complexity, and risk. To address these issues, Emergent Space Technologies (Emergent) is proposing to develop a prototype plug-and-play P&S system that allows for heterogeneous, distributed scheduling of activities to occur simultaneously without conflict. The unique qualities of the proposed P&S system that will make it an innovative solution are the nature of how newly developed resources, tasks, and scheduling algorithms can easily be added to the system, how it will have an openly available and well-defined application programming interface (API) for developers to use, and how it will operate in a distributed environment as a resilient peer-to-peer architecture with no single points of failure. With these innovations in place, P&S implementations for flight dynamics, automation and autonomy, system monitoring, science planning, or any other activity can be developed and operated in remote locations and still be a fully-integrated solution.

Primary U.S. Work Locations and Key Partners



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Organizational
Responsibility**Responsible Mission
Directorate:**

Space Technology Mission
Directorate (STMD)

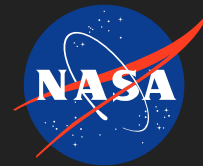
Lead Center / Facility:

Ames Research Center (ARC)

Responsible Program:

Small Business Innovation
Research/Small Business Tech
Transfer

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Organizations Performing Work	Role	Type	Location
★ Ames Research Center(ARC)	Lead Organization	NASA Center	Moffett Field, California
Emergent Space Technologies, Inc.	Supporting Organization	Industry	Greenbelt, Maryland

Primary U.S. Work Locations

California	Maryland
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Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Technology Areas

Primary:

- TX10 Autonomous Systems
 - └ TX10.2 Reasoning and Acting
 - └ TX10.2.2 Activity and Resource Planning and Scheduling